From Ruins to Living History in a Roman Metropolis on the Danube. The Archaeological Park Carnuntum – European Heritage Label Award

Cristian GĂZDAC, Franz HUMER

Abstract

Located between Vienna and Bratislava, Carnuntum is by far the largest archaeological landscape in entire Central and South-Eastern Europe. Nearly the entire ancient Roman city once spanning 10 square kilometres is still preserved underneath the fields and vineyards of Petronell-Carnuntum and Bad Deutsch-Altenburg. The Federal State of Lower Austria not only set new international scientific standards but it also designed a model in regards to land use planning and archaeological monument conservation how to shape future concepts destined to balance history, spatial planning and economy. In the interests of the public the archaeological heritage is also exploited more economically: by restoring old excavations, with new research excavations and partial or full reconstructions, which give visitors a better approach to ancient times; furthermore, by involving the public more closely when investigations can be observed "at close hand", and the presentation of finds in museums and special exhibitions. To this end, new presentation techniques and multi-media systems are used to communicate this information, including mobile phone application for VR.

Keywords: Carnuntum, archaeological park, cultural management, education

Introduction

The historical region between Vienna and Bratislava, the two closest capital cities in Europe, is today the largest archaeological landscape in central and southeast Europe. The remains of the ancient Roman city lie within the boundaries of today's market towns of Bad Deutsch-Altenburg and Petronell-Carnuntum. The centre of this settlement was bordered to the north by the River Danube and extended southwards roughly as far as today's S 7 railway line. To the east, the known built-up area extended here at least as far as Roseggergasse–Carnuntumgasse in Bad Deutsch-Altenburg.

To the west the city ended far beyond the city walls of the civilian city, buildings extended along the Limes Road towards *Vindobona* (Vienna) for at least one kilometre west of the baroque zoo wall (Figure 1). The actual urban area probably extended almost to Lake Neusiedl in the south and Fischamend in the west. Apart from excavated buildings in Höflein and Bruckneudorf, remains of buildings from Roman times have been identified

Figure 1. General map of Carnuntum's archaeological landscape. The coloured areas show the extent of the ancient city with its main urban districts (2016). (Amt der NÖ Landesregierung-Archäologischer Park Carnuntum, Bad Deutsch-Altenburg (Grafik: 7reasons Medien GmbH).

Figure 2. Part of a gladiator helmet found in Fischamend/Aequinoctium. (Amt der NÖ Landesregierung-Archäologischer Park Carnuntum, Bad Deutsch-Altenburg (Foto: N. Gail).

in the Leitha valley and around the Leitha hills, in–among others–Kaisersteinbruch, Sommerein, Mannersdorf am Leithagebirge, Hof am Leithaberge, Au am Leithaberge, Leithaprodersdorf, Donnerskirchen, Purbach and Winden am See. Roman buildings and finds are also known from Bruck an der Leitha, Arbesthal and Fischamend (Figure 2).[1] As there was no continuous settlement here after the end of antiquity–unlike many other locations on the Danube border (Regensburg, Passau, Linz, Vienna, Budapest)–most of the Roman city has not been built upon. This is an absolute stroke of luck from an archaeological and historical preservation

[1] For excavations in Höflein: Kastler 1995: 333-349, 333-349; for excavations in Bruckneudorf, most recently Zabehlicky 2008; for Carnuntum hinterland: Zabehlicky 2006: 354-359; Doneus and Griebl 2015; Doneus, Neubauer and Scharrer 2001: 53-72; for Fischamend, most recently Humer 2016a: 8-40.

point of view. That is why research and excavations have taken place in Carnuntum for 160 years. Small areas of the ancient city can be seen today in the Archaeological Park Carnuntum. However, this must be seen in a broader context: the attractions of this unique region, only 40 km east of Vienna, with its combination of untouched nature (National Park Donau-Auen, Nature Park Mannersdorfer Wueste, Nature Reserve Devin/SK), culture (Celtic and Roman excavations in Carnuntum, Höflein, Bruckneudorf, Devin/SK, Rusovce/SK, the medieval town of Hainburg, baroque castles in Marchfeld, picture Haydn) and exquisite viniculture (e.g. Göttlesbrunn, Höflein, Arbesthal, Prellenkirchen) cooperate very closely with one another. Synergy effects and potential for development are thus released in science, monument preservation, regional development and tourism (Figures 3-4).

For this reason, the Archaeological Park Carnuntum was established in several stages from 1988 onwards by the Province of Lower Austria (Jobst 1990). In 1996, a private operating company with limited liability was founded to provide efficient marketing. Today, the Archaeological Kulturpark Niederoesterreich-Betriebsges.m.b.H. (AKP), together with the Province of Lower Austria (Land NOE) as the owner of the open excavations, is concerned with conserving, presenting and marketing these monuments. This construct guarantees and enhances Carnuntum's sustainable attractiveness with consistent and scientifically-based product development. The allocation of responsibilities between both partners, Land NOE and AKP, is clearly defined by agreements: the Province, as a landowner, is responsible for the product

Figure 3. View to Porta Hungarica: River Danube with its wetlands and the bridge in Bad Deutsch-Altenburg. In the far background the city of Bratislava/SK (2003). (Franz Humer, Haslau a. d. Donau).

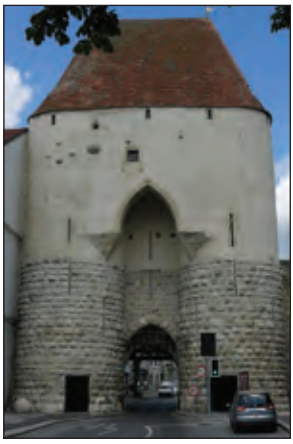

Figure 4. Medieval gate, the so-called "Wienertor" in Hainburg (2016). (Franz Humer, Haslau a. d. Donau).

Figure 5. Model of the ancient town of Carnuntum in Petronell-Carnuntum (2015) showing the provincial capital at the beginning of the 3rd century AD. Scale 1:300. (Archäologische Kulturpark Niederösterreich Betriebsges.m.b.H., Petronell-Carnuntum).

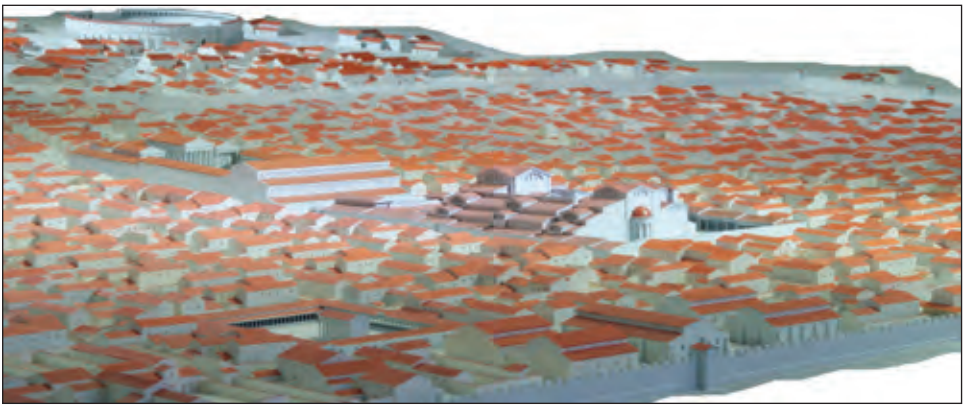

Figure 6. Detail of the model of Carnuntum with the Forum and the public baths of the civilian city. In the background the civilian amphitheatre (2011). (Amt der NÖ Landesregierung-Archäologischer Park Carnuntum, Bad Deutsch-Altenburg (Grafik: 7reasons Medien GmbH).

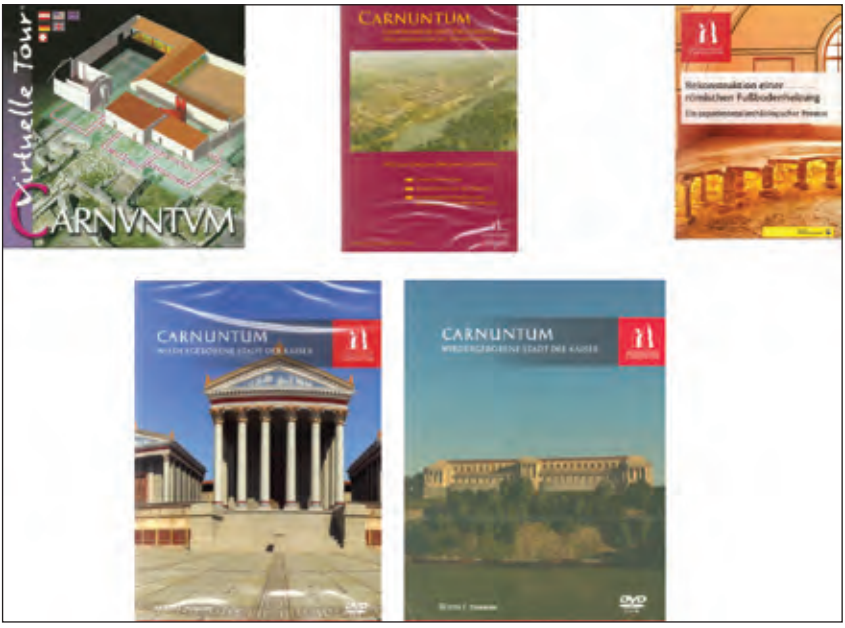

Figure 7. Virtual reconstructions of Carnuntum (DVD for home use). (Franz Humer, Haslau a. d. Donau).

Figure 8. The 19th-century excavations in the so-called "Tiergarten" in the 'civilian' town (1892). (Amt der NÖ Landesregierung-Archäologischer Park Carnuntum, Bad Deutsch-Altenburg

(excavations, exhibitions, scientific publications) and provides free of charge the scientific management for AKP; the latter takes over the final results and markets them (admissions, guided tours, museum shop, public events, marketing, public relations, sponsoring) and operates independently in these sectors. In the interests of the public the archaeological heritage is also exploited more economically: by restoring old excavations, with new research excavations and three-dimensional reconstructions, which give visitors a better approach to ancient times; furthermore, by involving the public more closely when investigations can be observed "at close hand", and the presentation of finds in museums and special exhibitions. To this end, new presentation techniques and multi-media systems are used to communicate this information. As a unique archaeological landscape, Carnuntum will be not only preserved, maintained and presented according to national and international guidelines for the preservation of monuments but also creates an attractive recreation area in the region with educational and enjoyment factors, which is marketed on several levels, where economic viability and commercial aims are not forgotten.

In the last few years, many preservations and presentation measures have been carried out in the excavations (open for decades) in the towns of Bad Deutsch-Altenburg and Petronell-Carnuntum. The necessary infrastructure has also begun to be installed (theme paths, the possibility of electro-mobility, footpaths and cycle tracks, signposts, planting). Each location in the Park covers a different part of ancient life: original archaeological finds in the Museum, ancient theatres, military and civilian life, a death cult. Thus, the extraordinary importance of this unique cultural experience can be emphasised despite the attractions of other recreational activities in central Europe.

Considering the ever-increasing number of regional, national and international cultural and leisure opportunities (which are inevitably competing with one another), the target audience being wooed increasingly by other promoters, and the growing expectations of visitors hoping for a spirit of adventure, then it has become more and more necessary that Carnuntum continues to draw attention to itself with relevant activities. The public's interest has to be awakened in order to achieve permanent visitor bonding, which would thus consolidate cultural development both locally as well as regionally, and to strengthen it in a sustainable way.

The main endeavour is to depict how people lived here some 1600 and 2000 years ago. With the creation of authentic areas of experience, visitors can imagine possible stories. To tell stories and thereby explain history is the chief aim when presenting cultural and tourism programmes today. Mentally

encountering real people, who–because of the archaeological legacy–can tell us that they once really lived in Carnuntum, awakes the ancient walls to life in the minds of visitors and increases awareness of the importance of the historic-cultural treasure that Carnuntum represents. The presentation of any kind, whether it is on-site or with new programmes for visitors, is based on a solid scientific survey, in other words, basic scientific research.

It was clear in 1988 when the resolution to erect the Archaeological Park was passed, that the project can only be implemented over the long term. And so, it is that this project has not been completed even today, quite the contrary: its extraordinary acceptance and popularity with the public results chiefly from the fact that people can follow Carnuntum's growth and further development live. This explains the many repeat visits.

The main aim of the Archaeological Park is to give visitors a comprehensible impression of the ancient city structure and the large area it covered. The history of the excavations means that the individual restored areas above ground are often very far apart and sometimes in a poor state of conservation. It is often almost impossible for visitors to gain an accurate impression of the extent and appearance of the ancient city. An urgent task of the Archaeological Park is on the one hand to conserve the few (in relation to the total size of the ancient city) visible archaeological sites and to present them as best possible. On the other hand, modern presentation techniques make possible a comprehensible overview of the whole ancient city. Immediately after the introductory presentation in the Visitor Centre Petronell, a model of the ancient city of Carnuntum to a scale of 1:300 can be seen on the way to the Roman residential quarter. This was preceded by years of scientific research into the assembly of this model and the map of the ancient city as well as experiments concerning its durability outdoors. Visitors can now gain a comprehensible picture of how Roman Carnuntum looked at the beginning of the 3rd century AD (cf. model: Gugl et al. 2011: 58-69) (Figures 5-6).

A virtual depiction of the city was necessary preparation for creating the model and a DVD of this is available for visitors, so that even after the visit a virtual stroll through the ancient city is also possible (APCB 2006; 2011; AKNB 2011; Bohuslav et al., 2000) (Figure 7).

Excavations (with interruptions) took place in Carnuntum again and again from the middle of the 19th century onwards (Figure 8).[2] Primarily "beautiful" artefacts and "treasures" were sought in the excavations of the 19th century. With one exception, the excavations, carried out under the auspices of different

[2] For old excavations: Genser 1986: 601-604, with extensive bibliography of excavation history since 1877; Jobst 1983; Niegl 1980; Stiglitz, Kandler and Jobst 1987: 721-727.

institutions (Gesellschaft der Freunde Carnuntums, Imperial and Royal Central Commission, Limes Commission of the Austrian Academy of Sciences), did not aim to conserve what had been uncovered and so they were buried once more. One did not want to lose agricultural land (Figure 9).[3] In the 20th century excavations by the Austrian Archaeological Institute, Graz University and the Province of Lower Austria made larger, unconnected excavation sites permanently accessible (civilian amphitheatre, the residential quarter in the field "Spaziergarten" and the forum public baths) (Figure 10).

But this also brought new but previously barely known preservation problems for the owner of these open sites: with the best intentions the uncovered building remains were conserved immediately after excavation with modern grey cement mortar (in sharp contrast to the limestone mortar used by the ancient Romans). Besides, walls and soil horizons from different building periods were partially restored (Figures 11-12). This was intended to convey an impression of Roman architecture and construction on the Danube limes. Due to the effects of decades of weather and the conservation methods used at that time with modern building materials, the ruins were in a very bad state of repair at the end of the last century (Humer 2016b: 75–84; Jobst 1988: 79–85) (Figure 13).

Thus, additional archaeological excavations have taken place since 1986 and new conservation techniques sought, which continue today.[4]

From the very beginning it was agreed by the federal office of monuments, the archaeologists involved, the restorers, the site owner, the builder, the present user and the advisory board (constituted solely for this purpose), that the excavated Roman features should be presented in a uniform period based on these new scientific investigations. While it was relatively simple to limit the Heidentor (Heathens' Gate) to a single building period in the middle of the 4th century AD, the reassessment in the residential quarter of the civilian city (Figure 14) showed continuous building development from the late 1st to the late 4th century AD. After evaluating the new scientific results, it was decided that only features from the early 4th century would be shown in this area: as anastylosis (paved roads), partial reconstructions (private houses) and three-dimensional reconstructions to a scale of 1:1, on top of the original features lying in situ (private house, city mansion and public baths, Figures 15-17). To quote the Charter of Lausanne

[3] An exception was the military amphitheatre in Bad Deutsch-Altenburg. This, with its remains of Roman walls, was excavated from 1888 onwards. It was purchased by the government of Lower Austria in 1889 and conserved.

[4] Additional excavations up to 2001 summarized in: Humer 2002: 165–172; Humer 2012a: 246-270.

(1998) Article 7[5]: "Reconstructions serve two important functions: experimental research and interpretation. They should, however, be carried out with great caution, to avoid disturbing any surviving archaeological evidence..."

The reconstruction measures were therefore carried out with the proviso that they should be reversible, i.e. that should the reproductions ever be removed, the original substance of the buildings could still be shown. On the one hand, the archaeological inventory will be permanently protected, and on the other hand, visitors can see an impressive three-dimensional picture of Roman culture. These partial and full reconstructions were erected in an exemplary manner using ancient building techniques and methods (Humer 2004a; Humer 2009a). This means that it was attempted to rebuild an edifice that was erected in ancient times with the materials, tools and building techniques available at that time. All stone walls were erected and plastered using former Roman quarry stones from the Carnuntum area as well as limestone mortar. The roof timbers, made of old wood dating from the 19th and early 20th century, also proved to be an interesting and successful attempt in experimental archaeology, using ancient methods of woodworking, as well as truss structures and timber joints. Tiles for roofs drain and underfloor heating systems were modelled on excavated original finds in specially reconstructed kilns and used in the buildings (Figures 18-20). Technical installations (underfloor heating systems, kitchen stoves, the supply of running water, warm water systems) were constructed to be fully functioning after much scientific testing. The gardens together with the plants of the complex were also able to be reconstructed (Figures 21-22). Long and intensive discussions by experts always preceded the building measures, with careful evaluation and consideration of the factors defining a reconstruction, such as features, historical sources, form, function, material, construction and statics (Figure 23).

Visitors should gain the impression that the inhabitants have "just left" the building. At specific action, weekends the individual installations in the buildings (for instance, kitchen, kiln, underfloor heating, etc.) are also put into operation and their function demonstrated (Figures 24-25). Through this reconstructed Roman architecture of the early 4th century people, today can

[5] The "Charter for the Protection and Management of the Archaeological Heritage" was compiled by the International Committee for the Management of Archaeological Heritage (ICAHM) and agreed at the IX ICOMOS general meeting in Lausanne. It is based on the "International Charter for the Conservation and Restoration of Monuments and Sites" which was adopted in Venice in 1964. Also important is the "European Convention on the Protection of the Archaeological Heritage" in the Valletta Treaty signed on 16.1.1992 by member states of the Council of Europe and other states party to the European Cultural Convention. The Charter was ratified by the Republic of Austria on January 23th, 2015.

understand for the first time how ancient rooms functioned, how closely built inner-city blocks originally looked with a maze of corners and different roof landscapes, how one felt like an ordinary person in such structures.[6]

In the past, the conservation of walls in the ruins was of prime importance in both amphitheatres and the public baths (Figures 26-27). Reassessment was only carried out very selectively (Boulasikis 2008: 95–107; Boulasikis and Humer 2008: 680-682; 2009: 563–564; 2010: 412–415; Boulasikis et al. 2011: 103–128; 2012: 83–152).

Apart from the presentation measures on the excavation site, modern transport and visitor infrastructure were created. This included connecting the archaeological sites with theme paths and creating an improved situation for people arriving in Petronell-Carnuntum, which has resulted in a central car park, a central meeting point with footpath to the civilian amphitheatre as well as a Visitor Centre in Petronell-Carnuntum (Figures 28-29). After entering the Park there, a "journey back in time", a slow immersion into the ancient world, begins for visitors. Apart from original pieces exhibited on the theme of a death cult and impressive video installations, the topography of Carnuntum is explained with a complete model (Humer 2011b: 42-57) (Figure 30). Then the reconstructed three-dimensional architecture of the early 4th century AD is revealed in the residential quarter.

Archaeological field excavations are planned in the near future here in the southern section of the *villa urbana* as well as in the portico north of North Street. Furthermore, measures in the third dimension are to be carried out in a private house and the *valetudinarium*'s commercial area (Figure 31). Restructuring work (walls, floor horizons) in the public baths and the military amphitheatre will, of course, be continued. In addition, further land purchases are planned for the establishment of archaeological conservation areas. The forum in the civilian city, the core area of the gladiator school and the east front of the auxiliary fort have all been protected in such a manner.

Apart from the monuments in situ in their natural environment, it was planned from the beginning of the project to scientifically evaluate movable cultural monuments and to present them in a comprehensible way. The Museum Carnuntinum in Bad Deutsch-Altenburg as part of the Archaeological Park provides an ideal platform for this purpose (Figure 32). The Museum was built in the historical-classicism tradition (which was then petering out) following plans by architects Friedrich Ohmann and August Kirstein and opened in 1904 in the

[6] For the manner of working with the archaeological monuments in Carnuntum: Humer 2005a: 13-21; 2008a: 171-183; 2011c: 87–106; 2013: 43-54. On this theme in general: Schmidt 1993; 2000; Gollmann 1987.

presence of Emperor Francis Joseph. The special architectural feature of this, the largest Roman museum in Austria, is its similarity to an ancient Roman villa: a two-storey building with an elevated protruding central risalit, which is emphasised by pylons rising laterally over the roof. The wings of the building on each side are not as tall as the central part, with round-arched windows on the upper floor and a simple gable roof. On the ground floor, the wings of the building are like loggias with compact, sturdy columns. Gravestones of legionary soldiers stationed in Carnuntum are on permanent display here (Figure 33). In the interior, the ground floor is designed as an open atrium with skylight. At the back of the entrance hall is a sunken re-creation of a Mithras cave. The large Mithras cult image that was found in 1894 in Petronell-Carnuntum is on display here. The staircase leads around the Mithraeum to the upper floor. The interior of the Museum is filled with changing exhibitions on various themes from Carnuntum's history.

As a museum today has educational and socio-political remits, its duties include narrating the cultural history of the highest possible quality and to make it come to life. It creates the basis for visitors to understand archaeological remains and thus our own culture. In contrast to the "experience" of ancient Rome in Petronell-Carnuntum, where the architectural buildings are paramount, mostly original artefacts from Carnuntum are on display in the Museum. In the past 24 years, exhibitions on the following themes have successfully been shown: *Civilian and military life on the Danube (Carnuntum. Das Erbe Roms an der Donau, 1992-2003)*; *The rule of Rome on the mid-Danube limes in the 2nd century AD (Marc Aurel und Carnuntum, 2004-2005)*; *The first appearance of Romans in Carnuntum and how it developed into the provincial capital (Legionslager und Druidenstab. Vom Legionslager zur Donaumetropole, 2006-2007)*; *Daily life in Carnuntum in different social classes (Von Kaisern und Bürgern. Antike Kostbarkeiten aus Carnuntum, 2008-2010)*; *Religious life in Carnuntum (Götterbilder-Menschenbilder. Religion und Kulte in Carnuntum, 2011-2012)*; *The Emperors' conference in Carnuntum and the beginnings of Christianity (AD 313 - Von Carnuntum zum Christentum, 2013-2016)*.[7]

Also, several special exhibitions have been shown in the Kulturfabrik Hainburg (Figure 34), a former tobacco factory dating from 1847 and also part of the Archaeological Park (2008b: 47-56; Gollmann 2012: 4–15; Pollhammer 2012: 46–51): *Celts and Romans at the turn of the eras (Die Steppe lebt – Felssteppen und Trockenrasen in Niederösterreich, 2008)*; *How does archaeology work? (Carnuntum - The Making of, 2010)*; *From excavation to architectural structures (Im Lot-Gebaute Geschichte in Carnuntum, 2012-2013)*.

[7] Extensive catalogues were published on these exhibitions: Humer et al. 2014; Humer and Kremer 2011; Bruckmüller and Humer 2011; Humer 2004b; 2006; 2009b; Jobst 1992b.

Figure 9. The 19th-century excavations in the legionary fortress. The area was used for agriculture before as well as after the excavations (about 1889). (Amt der NÖ Landesregierung-Archäologischer Park Carnuntum, Bad Deutsch-Altenburg).

Figure 10. Today's Petronell-Carnuntum with the Roman civilian quarter, the public baths and the civilian amphitheatre (2014). (Franz Humer, Haslau a. d. Donau).

Figure 11. Roman city quarter before the new excavations (1986). (Amt der NÖ Landesregierung-Archäologischer Park Carnuntum, Bad Deutsch-Altenburg).

Figure 12. Restorations parallel to excavations in 'Haus II' in the city quarter (1950). (Amt der NÖ Landesregierung-Archäologischer Park Carnuntum, Bad Deutsch-Altenburg).

Figure 13. The poor state of conservation at the public baths of the 'civilian' town, excavated 60 years ago (2004). (Franz Humer, Haslau a. d. Donau).

Figure 14. Roman city quarter with old restorations before the new excavations took place (1985). (Amt der NÖ Landesregierung-Archäologischer Park Carnuntum, Bad Deutsch-Altenburg)

Figure 15. Roman city quarter with new reconstructions in situ based on new investigations. (Google Earth (2015):.

Figure 16. Full reconstruction in situ of the public baths and a *villa* urbana based on the results of new investigations (2012). (Amt der NÖ Landesregierung-Abt. Hydrologie und Geoinformation, St. Pölten).

Figure 17. Representative main room of a Roman villa urbana showing the reconstructed original wall painting and reconstructed Roman furniture based on archaeological evidence (2015). (Archäologische Kulturpark Niederösterreich Betriebsges.m.b.H., Petronell-Carnuntum).

Figure 18. Work in progress reconstructing a Roman a private stone house using original materials (2005). (Franz Humer, Haslau a. d. Donau).

Figure 19. Roof with reconstructed tiles and functioning chimney (2007). (Franz Humer, Haslau a. d. Donau).

Figure 20. Reconstruction of an underfloor heating system in the public bath of the city quarter. The tiles for hypocaust and suspensura were fired as part of experimental archaeology (2010). (Franz Humer, Haslau a. d. Donau).

Figure 21. Reconstructed functioning cold water basin (2011). (Archäologische Kulturpark Niederösterreich Betriebsges.m.b.H., Petronell-Carnuntum).

Figure 22. Partial reconstruction *in situ* of a private house with garden, based on the results of new investigations (2003). (Franz Humer, Haslau a. d. Donau).

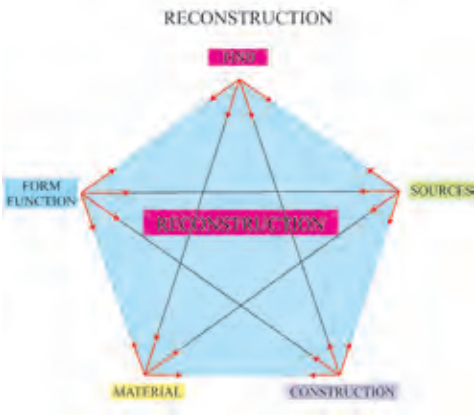

Figure 23. The network of reconstruction. (Karl-Friedrich Gollmann, Graz).

Figure 24. Living history: audience enjoying a Roman meal in the reconstructed *villa urbana* (2009). (Archäologische Kulturpark Niederösterreich Betriebsges.m.b.H., Petronell-Carnuntum).

Figure 25. Reconstructed *praefurnium* of a functioning underfloor-heating system (2006). (Franz Humer, Haslau a. d. Donau).

Figure 26. Civilian amphitheatre in Petronell-Carnuntum with new restorations (2006). (Franz Humer, Haslau a. d. Donau).

Figure 27. New conservation at the public baths of the 'civilian' city (2008). (Franz Humer, Haslau a. d. Donau).

Figure 28. Entrance to the Archaeological Park Carnuntum (2011). (Franz Humer, Haslau a. d. Donau)

Figure 29. Today´s Petronell-Carnuntum with car park, Visitor Centre, model and footpath to the civilian amphitheatre (2016). (Amt der NÖ Landesregierung-Archäologischer Park Carnuntum, Bad Deutsch-Altenburg).

Figure 30. Visitor Centre: travelling back in time with original tombstones (2011). (Archäologische Kulturpark Niederösterreich Betriebsges.m.b.H., Petronell-Carnuntum).

Figure 31. Roman city quarter showing areas for future scientific projects (2016). (Franz Humer, Haslau a. d. Donau).

Figure 32. Archaeological Museum Carnuntinum in Bad Deutsch-Altenburg (2009). (Archäologische Kulturpark Niederösterreich Betriebsges.m.b.H., Petronell-Carnuntum).

Figure 33. Left loggia of the Museum Carnuntinum with tombstones of legionnaires from the legio XIV Apollinaris (2009). (Franz Humer, Haslau a. d. Donau).

In this area of museum education, the successful Lower Austrian provincial exhibition "*Erobern-Entdecken-Erleben im Römerland Carnuntum*" in 2011 is an exception which took place in the three towns of the Archaeological Park (Figures 35-36). With around 555,000 tickets sold, it was the most successful exhibition in Lower Austria.[8] At the same time, it was a very strong impulse for the whole region (district of Bruck a. d. Leitha, the town of Schwechat) concerning contributing to the economy and collective memory. At the moment intensive preparations are underway for the exhibition "Der Adler Roms - Carnuntum und die Armee der Caesaren" (on the development of the Roman army on the Danube limes) which will take place in the Museum Carnuntinum in 2017-2020 (Figure 37).

Apart from scientific and economic aspects and the preservation of ancient monuments, it is a great challenge for the Archaeological Park Carnuntum, as a company supported by public funding, to fulfil legal requirements and provisions while considering the archaeological heritage. From 1 January 2016, all public institutions in Austria must be suitable for the disabled. Together with the Lower Austrian Bildungs- und Heimatwerk, on-site inspection of the Archaeological Park Carnuntum took place with people in wheel-chairs, blind or sight-impaired as well as hearing-impaired people in 2014 in order to determine any weaknesses from the point of view of those concerned and to work out solutions. At the same time the information control system in the residential quarter was revamped as part of an integrated communication concept. Large-scale sectional models beside the reconstructions show the functional structure of the houses on the excavation site. The diagrams also show the most important information about the relevant excavation features and dates of reconstruction. In addition to this information beside the individual artefacts, a central information island was erected at the start of the tour through the residential quarter (Figure 38). A tactile ground guidance system for blind or sight-impaired visitors leads them from the car park to the information island (Figure 39). All the information there and on the boards beside the objects is also available in braille (Figure 40). A plaster model of the city quarter beside the information island enables blind visitors to "feel" how the site and the houses looked in ancient times. There is also a braille guidebook available. Additional paving beside the model and up to the information island facilitates orientation for wheel-chair users. Mobile bag ramps and carry chairs as a modern interpretation of Roman sedan chairs make

[8] Up to that point the most successful provincial exhibitions were: 1976 in Stift Lilienfeld (*1000 Jahre Babenberger in Österreich*, 500,000 visitors), 2009 in Horn – Raabs a. d. Thaya – Telc/TCH (*Österreich.Tschechien. Geteilt-getrennt-vereint*, 405,192 visitors) and 2007 in Waidhofen a. d. Ybbs – St. Peter i. d. Au (*Feuer & Erde*, 401,000 visitors) (cf. Wikipedia 2019).

it possible for them to visit the reconstructions. Mobile induction devices enable those with hearing impairment to take part in guided tours. Several tour guides are being instructed in sign language. These measures do not only comply with legal requirements and social responsibility but the Archaeological Park "thus endorses international standards with regard to the quality of service to visitors (Wachter 2015: 10-15).

But why bother with all this? Would not a few information boards next to the established remains of buildings be sufficient? Or would it not be simpler and cheaper to simply fill up the excavations? Then the complicated and expensive conservation measures could be spared! One could perhaps build up a new project elsewhere with the results of the excavations that would not be so elaborate, and where the traffic situation would be better for visitors. And one would not have to take into consideration the conservation guidelines or those for the protection of ancient monuments.

However, issues of content and international agreements which should become part of national legislation are against this way of thinking.

For it has been established that the historical sources, most of which are hidden in the ground, give information about the life and work of people from far-gone ages and they are therefore essential for our own cultural identity. The greatest importance can, therefore, be attached to the permanent conservation of archaeological monuments as unique historical sources and pillars of our own history. Conservation and restoration are also closely connected with sustainable maintenance of the respective features. This has been defined in international agreements, such as in the Charter of Lausanne:

> "*The archaeological heritage is a fragile and non-renewable cultural resource. Land use must, therefore, be controlled and developed in order to minimise the destruction of the archaeological heritage. Policies for the protection of the archaeological heritage should constitute an integral component of policies relating to land use, development, and planning as well as of cultural, environmental and educational policies…. The creation of archaeological reserves should form part of such policies.*
> *The protection of the archaeological heritage should be integrated into planning policies at international, national, regional and local levels...*" (Art. 2)
> "*Legislation should require, and make provision for, the proper maintenance, management and conservation of the archaeological heritage.*" (Art. 3)
> *"The overall objective of archaeological heritage management should be the preservation of monuments and sites in situ, including proper long-term conservation and curation of all related records and collections etc."* (Art. 6)

Unfortunately, these statements (reserves, preservation of monuments in situ, conservation…) imply a certain "rivalry" with the demands of our

society today: if something is to be protected and conserved sustainably, whether archaeological monuments, nature reserves or existing ecosystems, then mankind's so-called "progress" is restricted. For frequently the different interests of science, protection of monuments and nature conservation, awareness of culture and history collide with the somewhat different interests of the economy, of infrastructural necessities such as transport, energy and housing. Very often "public interest" predominates in such cases[9]so that monuments must be documented and saved with complex excavations (or animals relocated) in much too short a time before they are completely destroyed. Thus, the differences between the aim of saving as much as possible (i.e. putting whole stretches of land under a "glass dome" where nothing may be changed) and the urge for further progress (where an increase in profits is more important than a historical or positive interaction with our disappearing resources) grow bigger and bigger.

But we should be aware that each nature and the historical monument is a UNICUM! These unique specimens can, of course, be reproduced to a certain extent, but the original frequently do not survive. A building destroyed by an excavator or an animal that becomes extinct without the public being aware of it is irretrievably lost! Is that what we want? Not, for the destruction of our biological and historical environment would bring a loss of part of our identity and create grave problems for the future! It should, therefore, be of great concern to our society to preserve archaeological monuments.

The "archaeological monument" is derived from both Greek words ἀρχάίος (ancient) and λοόγος (teaching). That means that archaeology is the "teaching of antiquities", it is the science that researches the cultural development of mankind using humanistic and natural scientific methods. The term "archaeology" was used in the year 1685 by the Frenchman Jacob Spon as his own definition of a field of research.[10] The British archaeologist, Sir Mortimer Wheeler[11], fittingly said, "The archaeologist is not digging up things, he is digging up people."

The aim of archaeological research is to elicit from the ground as much information as possible, using the most varied of questions and methods in

[9] Public interest is a vague legal term often used in laws placing the interests of the common good above those of individuals. Public interest is a vague legal term because it is not substantiated in any statutory provisions where it occurs.

[10] Jaques Spon, b. 1647 in Lyon, d. 1685, was doctor of medicine and archaeologist and undertook expeditions in Greece when it was under Ottoman rule. In 1679 he published his records in *Voyage d´Italie, de Dalmatie, de Grèce et du Levant*.

[11] Sir Mortimer Wheeler, b. 1890 in Glasgow, d. 1976, was a British archaeologist and one of the most important researchers into the Indus culture (Mohenjo Daro).

order to obtain evidence about types of settlement, living conditions, religion, social relationships and works of art created by people from different epochs. Objects to be examined are usually remains of buildings and articles of everyday use, such as tools, containers and weapons, but also jewellery and cult artefacts. They can be preserved in the remains of foundations or else may have survived above ground in architecture. They may have gone into the ground because they were buried with the dead as grave gifts for the afterlife, or else they may have had to be hidden because they were valuable. Much has survived because it was simply thrown away or was lost. Apart from these artefacts that are witnesses, inconspicuous traces in the soil are investigated, where they are only visible because their colour differs slightly from the surroundings. These witnesses show where the soil has been disturbed and the original structure and colour of the natural ground has changed, for instance in filled-in ditches, post holes or plant trenches.

However, excavations always bring a high degree of destruction of the original features. For, in order to reach results about older horizons, first of all, the younger cultural horizons or sectors above them must be removed and thus destroyed. All that remains of this younger horizon are the finds and the documentation that was created before it was destroyed.[12] In addition, the preserved remains of features must be quickly conserved and exhibited, for the public also has the right to see and understand the results, because most archaeological investigations are carried out with taxpayers' money. And the uncovered features have–in contrast to when they were in use in former times–very seldom a preserved roof as protection from the elements.

Lack of time and money means that not nearly enough can be excavated in good time to save it from destruction in the future. And so, in Carnuntum non-destructive investigation methods (aerial archaeology, geo-prospection, ground surveys) are increasingly being employed to find and map the archaeological heritage that is hidden in the ground. The measures cannot, of course, completely replace field archaeology investigations in each case, particularly with regard to chronological questions. But the demands of society today are causing the loss of archaeological monuments so rapidly that more and more large-scale protection measures and specific field archaeological emergency excavations are necessary in order to save at least the "most important" artefacts. Decision-making here is based on the research results of archaeological prospection.

Geophysical prospection is based on the measuring of the tiniest contrasts between the physical characteristics of archaeological structures beneath the

[12] For cultural horizons and excavation methods in general: Gamble 2000; Gersbach and Hahn 1989; Harris 1979.

ground and the soil material surrounding them. Magnetic field measurements, ground radar and electric resistance measurements have proved to be excellent for the geophysical prospection in Carnuntum.

These two- and three-dimensional high-resolution measuring images of the sub-surface are similar to X-rays and are interpreted archaeologically in a geographic information system (GIS) together with all other information so that comprehensive maps of the remains hidden in the ground can be drawn up. In this way layouts of buildings can be deduced down to the smallest detail and the hidden underground structures can be reconstructed using special 3D computer software (Figures 41-42). The measured non-visible archaeological landscape is converted into a virtual landscape without having to disturb the soil.

Over the past twenty years, numerous spectacular and internationally respected results have been achieved, with discoveries such as the civilian city forum, the garrison of the governor's guards or the preserved gladiator school, which is unique throughout the world (Figures 43-45).[13] Together with the Ludwig Boltzmann Institute for Archaeological Prospection and Virtual Archaeology (LBI ArchPro)–founded in 2010 and operating globally–the prospection of the complete central area of the city of Carnuntum was carried out from 2012 to 2014 and an authentic city plan was drawn up. During this process, more than 743 hectares were investigated with geophysics, 232 hectares with ground radar and 22.4 hectares with electromagnetic induction methods. The results of this analysis generated some completely new insights into the development of Carnuntum's urban history (Figures 46-47). Overlapping older and younger building measures enabled a comparative chronology to be determined as well as the existence of many previously unknown infrastructure complexes that supplied the provincial capital. The measurements have shown, for instance, that Roman Carnuntum was very closely connected with the hinterland and rural structures were to be found near the urban area. With this overall picture, the Roman system of water supply and disposal, as well as the road system, can be identified extremely well. In addition, sources of raw material–which were extensively used–appear within the city limits (sand, gravel, clay). The quarries near Pfaffenberg and in Mannersdorf a. L., the wood for building that was in plentiful supply in the Danube wetlands and the now verified sand and gravel pits, as well as the pits where clay could be removed,

[13] Presentation of first results of the prospection: press conference on the garrison of the governor's guards on the 2nd of March 2016; press conference on the first Roman camp on the 18th June 2014; press conference on the gladiator school on the 5th September 2011 (Neubauer and Seren 1999: 359-368).

suggest that most of the building material necessary for the construction of the city could be found locally. A large area of farmland also seems to have been situated within the city limits. Apart from numerous temporary military camps and what have so far been unknown burial fields, it was able to be established that built-up settlement areas later had to make way for massive fortifications with outer walls and moats when the city expanded.[14] A further step in the sense of modern communication was to use the established underground features of the ancient gladiator school as augmented reality for tablets and smartphones. This location-based "expanded reality" enables the position of the non-visible archaeological features to be calculated on the screen of the mobile device, using the position of the user (GPS), the direction in which the user is facing (compass) and the motion sensor. At the same additional information about the surroundings can be seen on the computer display. The combination of prospection results, a virtual reconstruction based on these results, and GPS awaken the non-visible features lying in natural surroundings under farmland (Figure 48).[15] This new technology was the centre of world-wide interest particularly in 2016 with the app "Pokémon Go".

Over the next few years, the non-destructive investigations will lead to much more research, for Carnuntum's surrounding environment is also to be examined. The results of these investigations will be the basis of future scientific appraisal of Carnuntum for at least the next 30 years as far as field archaeology is concerned.

The systematic evaluation of all available aerial photographs of the archaeological landscape Carnuntum has also been completed. Research partners are the aerial photography archive of the Institute for Ancient History and Archaeology (today: Institute of Prehistory and Historical Archaeology) of the University of Vienna, the Institute for the Study of Ancient Culture of the Austrian Academy of Sciences (IKAnt, ÖAW) and the Province of Lower Austria.

---

[14] archpro.lbg.ac.at. Investigations were supported by an international partner network in Great Britain, Norway, Sweden, Germany and Austria. The results of this three-year research project are stored unpublished in images, interpretation, maps and text and are being scientifically evaluated at present: Humer *et al*. 2015. In general: Neubauer 2011: 27-29; [s.a].

[15] www.wikitude.com; Carnuntum is one of four case studies where interns of the EU project "Initial Training Network for Digital Cultural Heritage: Projecting our Past to the Future (ITN-DCH)" as part of the Marie-Curie fellowship project of the 7th research programme of the European Commission in the field of digital documentation and conservation as well as protection of the cultural heritage test the possibilities of digitizing historical buildings, archaeological finds and landscapes. This ranges from inventory and scientific research to virtual reconstruction in multi-media applications (www.itn-dch.org).

Figure 34. Kulturfabrik Hainburg seen from the Danube National Park (2007). (Franz Humer, Haslau a. d. Donau).

Figure 35. Lower Austrian provincial exhibition "Erobern-Entdecken-Erleben im Römerland Carnuntum" (2011). (Archäologische Kulturpark Niederösterreich Betriebsges.m.b.H., Petronell-Carnuntum)

Figure 36. Publicity for the Lower Austrian provincial exhibition "Erobern-Entdecken-Erleben im Römerland Carnuntum" (2011). (Amt der NÖ Landesregierung-Archäologischer Park Carnuntum, Bad Deutsch-Altenburg).

Figure 37. Reconstruction of an eagle as a *signum* for a Roman legion (2006). (Amt der NÖ Landesregierung-Archäologischer Park Carnuntum, Bad Deutsch-Altenburg).

Figure 38. Information desk with screen and braille in the city quarter (2015). (Franz Humer, Haslau a. d. Donau).

Figure 39. Tactile ground guidance system for the blind (2015). Franz Humer, Haslau a. d. Donau).

Figure 40. Braille-system for the blind in the city quarter (2015). (Franz Humer, Haslau a. d. Donau).

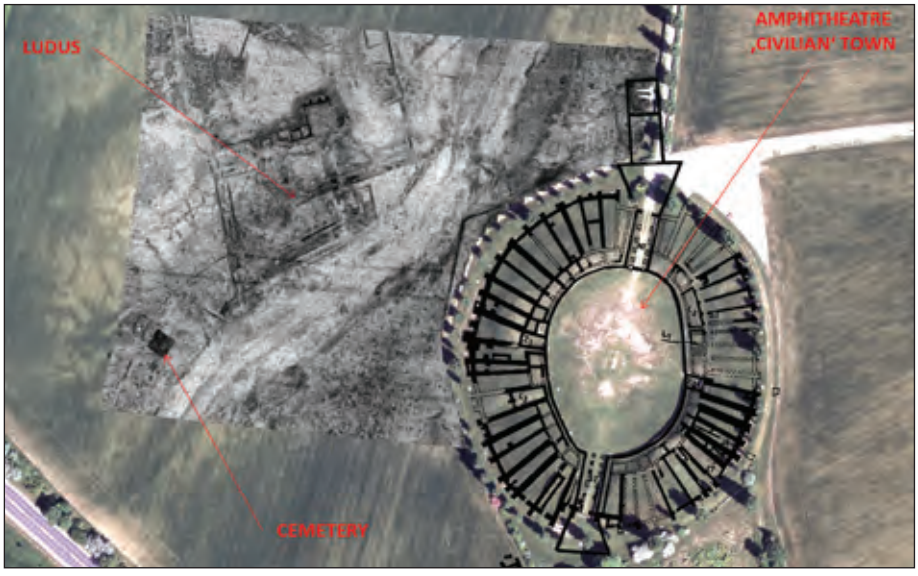

Figure 41. Non-invasive measuring of Roman building features. Gladiator school west of the civilian amphitheatre (2010). (Amt der NÖ Landesregierung-Archäologischer Park Carnuntum, Bad Deutsch-Altenburg (Messungen und Grafik: LBI für Archäologische Prospektion und Virtuelle Archäologie).

Figure 42. Virtual reconstruction of the gladiator school (2011). (Amt der NÖ Landesregierung-Archäologischer Park Carnuntum, Bad Deutsch-Altenburg (Grafik: 7reasons Medien GmbH).

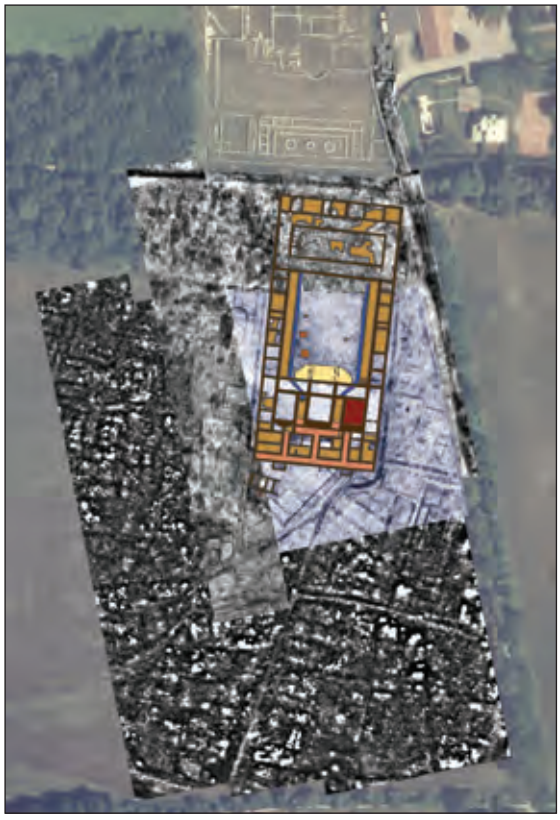

Figure 43. Non-invasive measuring of Roman building features. Forum of 'civilian' city (1996). (Amt der NÖ Landesregierung-Archäologischer Park Carnuntum, Bad Deutsch-Altenburg (Messungen und Grafik: LBI für Archäologische Prospektion und Virtuelle Archäologie)

Figure 44. Non-invasive measuring Roman building features. Very early military camp from the beginning of 1st century AD in what became later the 'civilian' city (2016). (Amt der NÖ Landesregierung-Archäologischer Park Carnuntum, Bad Deutsch-Altenburg (Grafik: 7reasons Medien GmbH)).

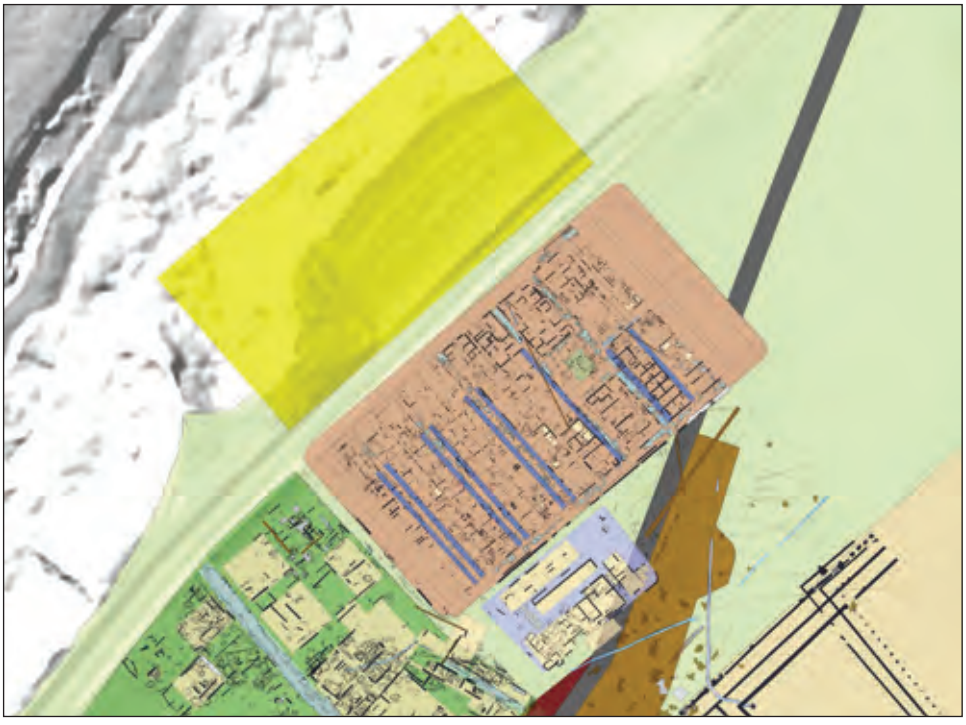

Figure 45. The garrison of the governor's guards in Carnuntum within the *canabae legionis* (2016). (Amt der NÖ Landesregierung-Archäologischer Park Carnuntum, Bad Deutsch-Altenburg (Messungen und Grafik: LBI für Archäologische Prospektion und Virtuelle Archäologie).

Figure 46. Civilian amphitheatre, gladiator school and commercial district (2016). (Amt der NÖ Landesregierung-Archäologischer Park Carnuntum, Bad Deutsch-Altenburg (Grafik: 7reasons Medien GmbH)).

Figure 47. Non-invasive measuring Roman building features. Method of geophysical prospection (2015). (Amt der NÖ Landesregierung-Archäologischer Park Carnuntum, Bad Deutsch-Altenburg (Messungen und Grafik: LBI für Archäologische Prospektion und Virtuelle Archäologie).

Figure 48. Applied augmented reality: Virtual reconstruction of gladiator school *'in situ'* (2016). (Amt der NÖ Landesregierung-Archäologischer Park Carnuntum, Bad Deutsch-Altenburg (Grafik: 7reasons Medien GmbH)).

Figure 49. Airborne laser scanning. (Amt der NÖ Landesregierung-Abt. Hydrologie und Geoinformation, St. Pölten).

Figure 50. Kulturfabrik Hainburg. Store-hall for Roman stone monuments from Carnuntum (2007). (Franz Humer, Haslau a. d. Donau)

Figure 51. Kulturfabrik Hainburg. Restoration Laboratory (2007). (Franz Humer, Haslau a. d. Donau)

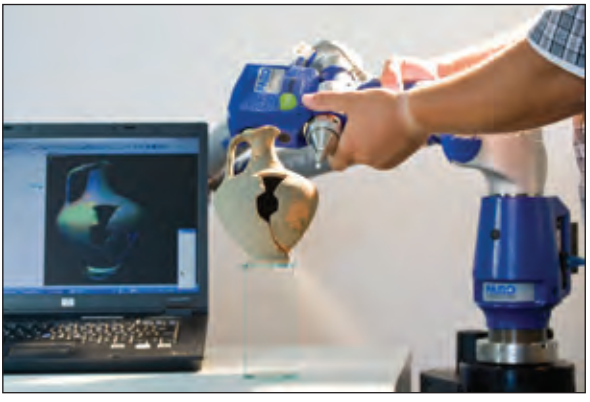

Figure 53. Laser scanning for www.carnuntum-db.at: grid of the scanned object (2016). (Amt der NÖ Landesregierung-Abt. Hydrologie und Geoinformation, St. Pölten).

Figure 52. Kulturfabrik Hainburg. The assembly place for pottery, wall painting, etc. (2007). (Franz Humer, Haslau a. d. Donau)

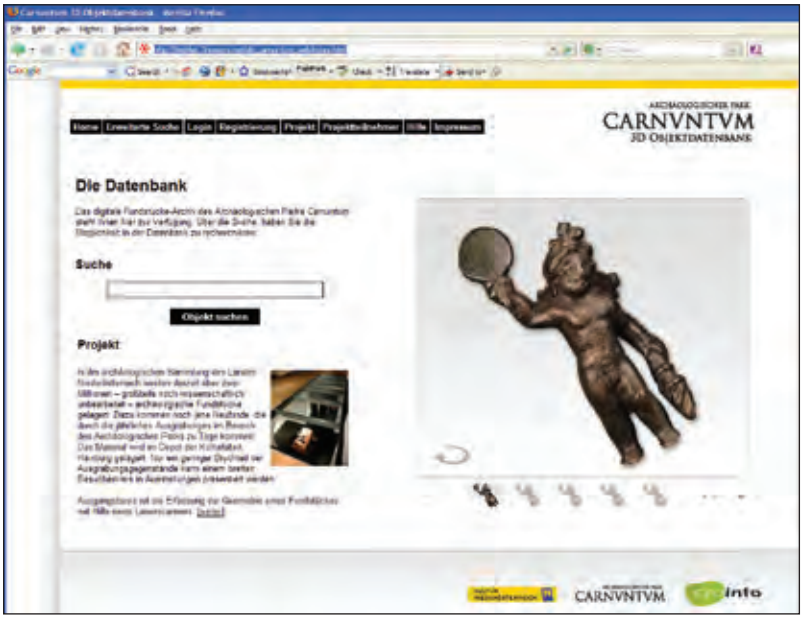

Figure 54. Database www.carnuntum-db.at. (Amt der NÖ Landesregierung-Abt. Hydrologie und Geoinformation, St. Pölten).

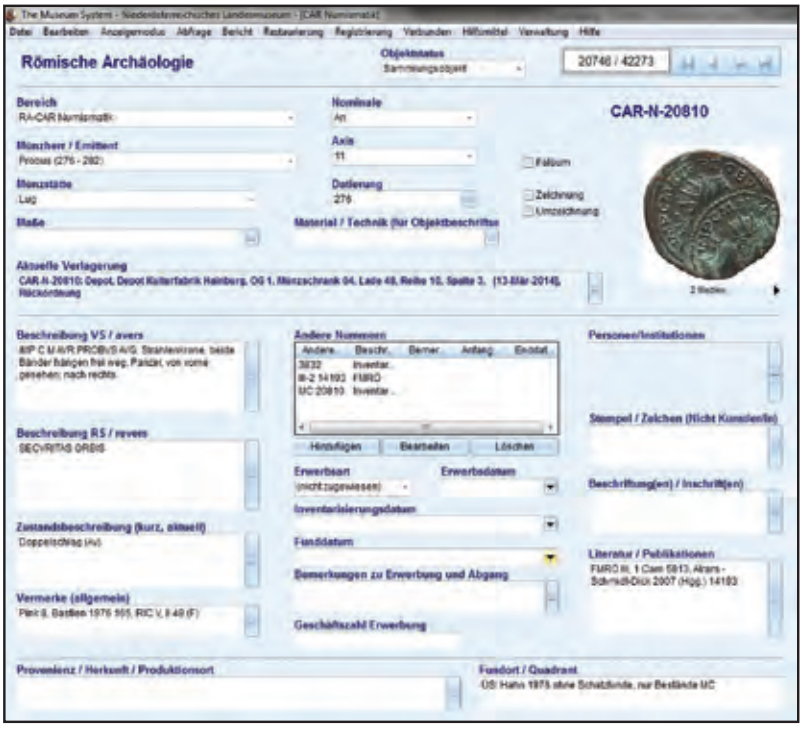

Figure 55. Database TMS for coins. (Amt der NÖ Landesregierung-Archäologischer Park Carnuntum, Bad Deutsch-Altenburg).

Figure 56. Scientific publications: monographs. (Franz Humer, Haslau a. d. Donau).

Figure 57. Scientific publications: congresses, annuals and others. (Franz Humer, Haslau a. d. Donau).

Figure 58. Experimental archaeology: reconstruction of the training arena in the gladiator school (2016). (Amt der NÖ Landesregierung-Archäologischer Park Carnuntum, Bad Deutsch-Altenburg (Foto: N. Gail)).

Figure 59. Experimental archaeology: meal using G. Apicius's recipes before the gladiator fights (2016). (Amt der NÖ Landesregierung-Archäologischer Park Carnuntum, Bad Deutsch-Altenburg (Foto: N. Gail)).

Figure 60. Experimental archaeology: *pompa* to the reconstructed training arena in the gladiator school (2016). (Amt der NÖ Landesregierung-Archäologischer Park Carnuntum, Bad Deutsch-Altenburg (Foto: N. Gail)).

Figure 61. Experimental archaeology: gladiator fights in the training arena (2016). (Amt der NÖ Landesregierung-Archäologischer Park Carnuntum, Bad Deutsch-Altenburg (Foto: N. Gail)).

Figure 62. European Heritage Label in Brussels: Franz Humer, Androulla Vassilliou, Markus Wachter (2014). (Archäologische Kulturpark Niederösterreich Betriebsges.m.b.H., Petronell-Carnuntum).

Figure 63. Map of the Austrian part of the Danube limes (FRE). (Christoph Flügel, München).

Figure 64. Areas in Carnuntum chosen for protection under the World Heritage (2016). (Schabl Consulting e.U., Vienna).

With the aid of airborne laser scanning (ALS), the topography of the earth's surface can be measured in great detail and with great precision in a very short time. All remaining archaeological structures in the topography can now be seen and interpreted in the digital models of the terrain (Figure 49). The ALS method also enables archaeological structures to be found in wooded areas as the vegetation can be blocked out with special processes. This is very important in Carnuntum as the northern part of the terrain is covered by densely wooded wetlands where aerial photography and geo-prospection are not possible. The creation of airborne imaging spectroscopy (AIS) also brings new results (consistent with international research standards) for the documentation of the archaeological heritage of whole landscapes. "Hyperspectral scanning allows aerial photographs to be recorded not only in the frequency of visible light but also in very narrow frequency bands from near-infrared to ultraviolet. The data of such airborne scans can then be depicted as three-dimensional stacks of aerial photographs, where archaeological structures become visible through special algorithms." (Neubauer and Gugl 2014: 151-153).

A central measure for the successful further development of the Archaeological Park Carnuntum in the field of basic research is the appraisal of the enormous amount of finds of all types of archaeological material from old excavations of the 19th century and the new finds from the additional excavations that have been taking place in the Archaeological Park since 1986 (roughly estimated to be at least 2.8 million objects).

The necessary infrastructure (depot, restoration workshops, research assistants, data banks) was created over the past few years in the Kulturfabrik Hainburg (Humer and Pollhammer 2016: 71-78; Pollhammer 2016: 163-176; Humer 2005b: 43-44; 2014b: 140-141) (Figures 50-51).

Modern cleaning, restoration, conservation and scientific appraisal of the archaeological exhibits can be seen in the current research projects on stone monuments (cult and shrine monuments, inscriptions, Pfaffenberg)[16], numismatic material (about 100,000 coins)[17], intaglios (about 1,500 pieces), glass, murals and ceramics (Figure 52). The scientific evaluation will create here the "basic products" for the further positive development of the Archaeological Park Carnuntum over the next years and decades.

[16] Research project cult and consecrated monuments: FwF-Projekt P 17542-G2, Project partner: Ikant, ÖAW; Research project New edition CIL: FwF-Projekte P 20513-G02 and P 17545-G02, Project partner: Institute for Ancient History and Archaeology, Papyrology and Epigraphy of the University of Vienna; research project Pfaffenberg stone monuments and quarrying: FwF-Projekt P 26368-G21, project partner: Ikant, ÖAW.

[17] Project partner: Rumanian Academy of Sciences, Institute of Archaeology and Art History Cluj-Napoca.

Apart from classical archiving and scientific evaluation, chosen artefacts (about 6,000 at the moment) are now retrievable worldwide and at all times through continuing laser scanning. Each object shows its geometric characteristics as a 3D model, together with the most important information about the relevant object (Figures 53-54). The artefacts will be freely available for international research purposes via the internet[18] (Pregesbauer 2004; Humer 2009c: 66). Private persons can also gain from this free availability, whereby at first there were grave doubts as to whether this would be a counter-productive approach for museums, as keepers of the original, and they would lose their visitors. But today we can see that museums and research facilities have nothing to fear in times of progressing digitalization. "When some years ago it was demanded that museums should digitalize their collections, it was feared that the availability via the internet could lower the incentive to visit the collections on site. In the meantime, the opposite has proved to be the case. The higher the presence of an artwork in the media, the more often it is printed, down-loaded or posted, the more the public wishes to see the original" (Gropp and Voss 2015).

The processing of some 100,000 Roman coins found in Carnuntum and their preparation involves scientifically appraising the coins according to international standards, documenting and archiving them in the Province's own inventory program TMS (The Museum System) (Figure 55). The intaglios, cameos, a large part of the stone monuments as well as the extensive map archive have already been processed in this way and publicized (Figure 56). In addition, reports from congresses on scientific symposiums, monographs and the Carnuntum Jahrbuch have been published (Figure 57).

In order to collect the scientific data of the research facilities working in Carnuntum, IKant of the Austrian Academy of Sciences (with financial support from the Province of Lower Austria) developed a geographic information system (GIS) which records, classifies and locates all archaeological activities in Carnuntum.

In this way, all 767 cult and consecrated monuments can be retrieved via stored descriptions in a factual data bank as well as via a map showing locations of finds, and used for further research activities.

Other external data banks have also been integrated into the GIS: i.e. the 1,153 inscriptions as a new edition of the *Corpus Inscriptionum Latinarum* (CIL); about 38,500 coins, which were incorporated in the course of the FMRÖ project from the Numismatic Commission of the ÖAW; the stone monuments

[18] www.carnuntum-db.at; Project partner: Abt. Hydrologie und Geoinformation des Amtes der NÖ Landesregierung.

of the 15th legion from Carnuntum, and the 3D-culture data bank Carnuntum processed by Martin Mosser (City Archaeology, Vienna). These data banks are linked with GIS and are now an important foundation for current scientific research in Carnuntum and for a future Carnuntum archaeological information system (Gugl 2011: 18).

Several scientific projects concerning experimental archaeology have been and are being carried out in Carnuntum parallel to the building experiments of three-dimensional reconstructions. Besides complete kits for Roman legionaries, a complete set of parade armour for horse and rider has been made in cooperation with M. Junkelmann, based on original finds from Carnuntum.[19] At the moment work is in progress on the theme of ancient gladiators. At the same time, the wooden practice arena in the gladiator school has been reconstructed and equipped with the original fixtures, following the latest excavation findings (Humer 2012b: 62-65; 2014a: 167-172) (Figure 58). For the first time, it will be attempted to show the whole sequence of ancient gladiatorial events, with a feast (*cena*), ceremonious entry (*pompa*) and fights in the original location. These procedures, which again will be performed by M. Junkelmann and his team, are also the basis for a TV film which is being produced at the present time (Junkelmann and Humer 2016) (Figures 59-61).

All these briefly described measures in the areas of science, transfer of knowledge, visitor services and innovative presentation techniques also serve to fulfil Carnuntum's educational mandate. Of course, the measures in the Archaeological Park are to be carried out taking into consideration the economic aspects as best possible, since the funds deployed here are tax revenues. But these measures must not be at the expense of scientific rigour and sustainability. The Park is held in great esteem internationally, which could be seen in 2014 when the Archaeological Park Carnuntum was the first archaeological site in Europe to be awarded the European Heritage Label from the European Commission in Brussels (Figure 62).[20] This honour is awarded to cultural monuments, cultural landscapes or memorials which have played an important role in the history and culture of Europe and/or in the development of the European Union.

For some years Carnuntum has also been part of the planned World Heritage submission "Frontiers of the Roman Empire" (FRE). The idea behind this is that all Roman border segments should be combined in a single World Heritage Site. In contrast to the Great Wall of China, for instance, the Roman limes pass

[19] *Legionarius* of Severan time: Jobst 1992: 304; *legionarius* of Augustan time: Humer 2006: 97-98; Parade armour for horse and rider: Junkelmann 1996; Humer and Jobst 1992: 239-245.

[20] Cf. EUCom 2019. The EU Commissioner for Education and Culture, Androulla Vassiliou, ceremoniously presented the award on the 8th of April 2014 in Brussels.

through the territories of ten European states and the same number in the Near East and North Africa. "The Frontiers of the Roman Empire World Heritage Site should consist of the line(s) of the frontier at the height of the empire from Trajan to Septimius Severus (about 100 to 200 AD), and military installations of different periods which are on that line. The installations include fortresses, forts, towers, the Limes Road, artificial barriers and immediately associated civil structures." This definition of the transnational world heritage site "Limes" was formulated by the so-called Bratislava Group in 2003 and it excludes outposts and forts in the hinterland (Breeze, Jilek and Thiel 2005: 23; UNESCO 2019; Flügel and Kuttner 2016).

Worldwide 30 new applications are submitted every year. The UNESCO-World Heritage Committee (consisting of 21 representatives from member states – elected for six years) decides if an application is to be accepted. It examines whether the proposed sites fulfil the criteria of "uniqueness" and the "historical authenticity" of the cultural monument as laid down in the Convention. A convincing preservation and management plan must also be submitted. The International Council on Monuments and Sites (ICOMOS) advises the World Heritage Committee in its work. Three segments of the Roman Limes have already been awarded World Heritage status: Hadrian's Wall/GB in the year 1987, the Upper German-Rhaetian Limes/D in the year 2005 and the Antonine Wall/GB in the year 2008. Now the Bavarian and Austrian Danube Limes are to be submitted together. In Austria there are 4 Roman military camps, 12 forts and 5 watch-towers (Figures 63-64). For each location the Austrian Federal Chancellery, the Federal Office for the Care of Monuments and the three provinces involved (Upper Austria, Lower Austria and Vienna) worked together preparing core and puffer zones in each case, ready for the official application, which should take place in 2017.

Carnuntum should gradually achieve the international position it held in ancient times. And especially in the 21st century new groups of visitors are to be tapped. Already growing interest from visitors in Slovakia, Hungary, the Czech Republic and from overseas has been recorded. Every year about 165,000 tickets are sold in the Archaeological Park Carnuntum, and this is continually on the increase. A presumably unique isolated event was the successful implementation of the Lower Austrian Provincial Exhibition in 2011 with around 555,000 visitors. International comparisons show that investments are profitable in the long term. Over the past 40 years some 200 million euros have been invested into ongoing research in the Archaeological Park Xanten /D and into making it more attractive. The annual number of visitors increased to about 350,000 to 400,000 over this period of time.

Wanting to assume a leading position among all the other famous Roman archaeological centres does not mean competition with sites such as Pompeii, Ephesus or even Rome, which is, of course, impossible Rather, a niche is to be found for Carnuntum through rigorous work in scientific basic research parallel to modern marketing and tourism, with the image and position corresponding to the ancient importance of the city. International media interest only results from scientific sensations. Then, however, the real conditions and dramaturgy have to match raised expectations.

The attempt is being made to handle the archaeological heritage in Carnuntum in a deliberately restrained manner. The aim is always to protect the legacy of our own history. The Archaeological Park Carnuntum is–together with its scientific significance as one of the most important sources of ancient cultural history in Austria–a major identification factor as the preserver of the Roman past and offers promising scientific and cultural tourism perspectives for the future.

References

AKNP (2011) = Archäologische Kulturpark Niederösterreich Betriebsgesellschaft mbH©/Landsmann+Landsmann Videoproduktion OG, *Rekonstruktion einer römischen Fußbodenheizung* (Vienna, 2011)

APCB (2006) = Archäologischer Park Carnuntum Betriebsges.m.b.h./7reasons Medien GmbH (eds.), Carnuntum - Legionsadler und Druidenstab. Vom Legionslager zur Donaumetropole. DVD zum Jubiläum 2000 Jahre Carnuntum (Vienna, 2006).

APCB (2011) = Archäologischer Park Carnuntum Betriebsges.m.b.h./7reasons Medien GmbH (eds), Carnuntum - Wiedergeborene Stadt der Kaiser / Carnuntum interaktiv. DVD zur Gesamtrekonstruktion von Carnuntum (Vienna, 2011).

Bohuslav, Petra et al. *Virtueller Rundgang durch das antike Carnuntum. CD-ROM zur virtuellen Rekonstruktion eines römischen Wohnstadtviertels* (Vienna, 2000).

Bohuslav, Petra, Humer Franz, Schenk, Martin, Voigt Andreas. "Virtual tour of the Roman city of Carnuntum: an example for Virtual Reconstruction of archaeological findings". In: Niccolucci, Francisco (ed.). *Virtual Archaeology. Proceedings of the VAST2000 Euroconference held in Arrezzo, 24-25 November 2000* [BAR international series, 1075] (Oxford: Archaeopress): 209-212.

Boulasikis, Demetrios. "Das Nemeseum am Westtor des Amphitheaters I von Carnuntum. Vorbericht zu den Grabungen". *Carnuntum Jahrbuch* (2008): 95–107.

Boulasikis, Demetrios and Humer Franz. "Untersuchungen im Amphitheater der Lagerstadt Carnuntum". *Fundberichte aus Österreich* (46, 2008): 680-682.

Boulasikis, Demetrios and Humer Franz. "Untersuchungen im Amphitheater Bad Deutsch-Altenburg". *Fundberichte aus Österreich* (47, 2009): 563–564.

Boulasikis, Demetrios and Humer Franz. "Untersuchungen im Amphitheater Bad Deutsch-Altenburg". *Fundberichte aus Österreich* (48, 2010): 412–415.

Boulasikis, Demetrios et al. "Die Altfunde aus dem Militäramphitheater von Carnuntum I. Glas, Terra Sigillata und reduzierend gebrannte Waren". *Carnuntum Jahrbuch* (2011): 103–128.

Boulasikis, Demetrios et al. "Die Altfunde aus dem Militäramphitheater von Carnuntum II. Fibeln, Metallfunde, spätlatènezeitliche und mittelalterliche Keramik". *Carnuntum Jahrbuch* (2012): 83–152.

Breeze, David, Jilek, Sonja and Thiel, Andreas. *Grenzen des Römischen Reiches* (Edinburgh-Esslingen-Wien: Historic Scotland and Deutsche Limeskommission, 2005).

Bruckmüller, Ernst and Humer Franz (eds.), *Erobern – Entdecken – Erleben im Römerland Carnuntum. Katalog zur Niederösterreichischen Landesausstellung 16. April – 15. November 2011* (Schallaburg, 2011)

EUCom (2019) = European Commission. *European Heritage Label*. Online: ec.europa.eu/programmes/creative-europe/actions/heritage-label_en.

Doneus, Michael and Griebl, Monika (eds.), *Die Leitha – Facetten einer Landschaft* [Archäologie Österreichs Spezial 3]. Vienna, 2015.

Doneus, Michael, Neubauer, Wolfgang and Scharrer, Günther. "Archäologische Prospektion der Landschaft von Carnuntum", *Carnuntum Jahrbuch* (2001): 53–72.

Flügel, Christof and Kuttner, Eva. "Strategischer Vermittlungsplan („Interpretation Framework") für den Donaulimes (DLIF)". In: *Die Donaugrenze in Österreich und Bayern: Grenzlinie und Bollwerk des Römischen Reiches* (Münich-Enns, 2016).

Gamble, C., *Archaeology: The Basics* (London-New York: Routledge, 2000).

Genser, Karl, *Der österreichische Donaulimes in der Römerzeit. Ein Forschungsbericht* [Der römische Limes in Österreich 33] (Wien: Verlag der Österreichischen Akademie der Wissenschaften, 1986).

Gersbach, Ernst and Hahn, Johan, *Ausgrabung heute. Methoden und Techniken der Feldgrabung* (Darmstadt: Wissenschaftliche Buchgesellschaft, 1989).

Gollmann, Karl Fritz, *Architektur und Archäologie. Schutz von antiken Ausgrabungen* (Graz: Post-doc. Thesis, 1987).

Gollmann, Fritz. "Die Ausstellung „Im Lot – Gebaute Geschichte" in der Kulturfabrik Hainburg". *Acta Carnuntina* (2/2, 2012): 4–15.

Gropp, Rose-Maria and Voss, Julia. *Eine öffentliche Sammlung ist kein Durchlauferhitzer, Frankfurter Allgemeine Zeitung* (http://www.faz.net/aktuell/feuilleton/kunst/debatte-um-kunstmuseen-oeffentliche-sammlungen-13932039.html, 2015).

Gugl, Christian. "Strukturierte Information – GI-Technologie in der Archäologie als Grundlage für Recherchen und wissenschaftliche Analysen". *Denkmalpflege in Niederösterreich* (45, 2011): 18.

Gugl, Christian et al. "Aus alten Ruinen wiedererstanden. Das neue Gesamtmodell von Carnuntum". In: Bruckmüller, Ernst and Humer, Franz (eds.), *Erobern – Entdecken – Erleben im Römerland Carnuntum. Katalog zur Niederösterreichischen Landesausstellung 16. April – 15. November 2011* (Schallaburg, 2011): 58-69.

Harris, Edward. *Principles of Archaeological Stratigraphy* (London-New York: Academic Press, 1979).

Humer, F. (2002). "Untersuchungen im sudostlichen Teil der Zivilstadt Carnuntum. Ergebnisse der Ausgrabungen und Forschungen im Bereich der „Südstrasse". In: Asamer Bernard et al. (eds.), *Temenos. Festgabe für Florens Felten und Stefan Hiller. Dargebracht von Schülerinnen und Schülern des Instituts für Klassische Archäologie an der Paris Lodron-Universität Salzburg*, 165–172. Vienna: Phoibos.

Humer, F. (ed.) (2004a). *The Roman City Quarter in the Open Air Museum Petronell* [Archäologischer Park Carnuntum. Die Ausgrabungen 4] (Vienna: Kulturabteilung des Landes Niederösterreich and Archäologischer Park Carnuntum, 2004).

Humer, F. (ed.) (2004b). *Marc Aurel und Carnuntum. Katalog zur Sonderausstellung aus Anlass des Jubiläums „100 Jahre Archäologisches Museum Carnuntinum" in Bad Deutsch-Altenburg* (Horn, 2004).

Humer, F. (2005a). "Restaurierungen und Präsentation von archäologischen Denkmälern im Archäologischen Park Carnuntum". In: Baatz-Fischer, Bernard et al. (eds.) *Mehr Schein als Sein? Retusche. Ergänzung. Rekonstruktion. Illusion, Beiträge zur 19. Tagung des Österreichischen Restauratorenverbandes 11.-13. November 2004 in St. Pölten* [Mitteilungen des Österreichischen Restauratorenverbandes 10] (Vienna: ÖRV, 2005): 13-21.

Humer, F. (2005b). "Das Archäologische Zentraldepot Hainburg". *Denkmalpflege in Niederösterreich* (32, 2005): 43-44.

Humer, F. (ed.) (2006), *Legionsadler und Druidenstab. Vom Legionslager zur Donaumetropole* [Sonderausstellung aus Anlass des Jubiläums „2000 Jahre Carnuntum", Archäologisches Museum Carnuntinum Bad Deutsch-Altenburg 21. März 2006 – 11. November 2007] (Horn, 2006).

Humer, F. (2008a). "Archäologie und Denkmalschutz in Carnuntum". In: Pospechova, Petra/Wittgrúber, Peter (eds.), *Carnuntum-Gerulata. Germánske osídlenie pri Dunaji v priestore Bratislavskej brány ako sirsie hospodárske a sociálne zázemie Carnunta a Gerulaty. Záverčný seminár projektu. Zbornník* (Pezinok: Mestské múzeum, 2008): 171-183.

Humer, F. (2008b). "Das römische Carnuntum". In: Wiesbauer, H. (ed.), *Die Steppe lebt. Felssteppen und Trockenrasen in Niederösterreich. Begleitband zur gleichnamigen Ausstellung in Hainburg an der Donau* (St. Pölten, 2008): 47-56.

Humer Franz (ed.) (2009a). *Carnuntum. Ein römisches Wohnhaus der Spätantike in Carnuntum*. [Archäologischer Park Carnuntum. Die Ausgrabungen 5] (St. Pölten: Kulturabteilung des Landes Niederösterreich, 2009).

Humer Franz (ed.) (2009b), *Von Kaisern und Bürgern. Antike Kostbarkeiten aus Carnuntum. Katalog zur Sonderausstellung aus Anlass des Jubiläums „1700 Jahre Kaiserkonferenz in Carnuntum* (Vienna, 2009).

Humer Franz (2009c). "Conservation and presentation of archaeological monuments in the Archaeological Park Carnuntum". In: *Abstracts der Tagung Archäologie und Computer: Cultural Heritage and New Technologies, 16.-18. November 2009* (Vienna, 2009): 66.

Humer, F. (2011a). "Antike Metropole am Donaulimes. Der Archäologische Park Carnuntum". In: Bruckmüller, Ernst and Humer, Franz (eds.). Erobern – Entdecken

– Erleben im Römerland Carnuntum. Katalog zur Niederösterreichischen Landesausstellung 16. April – 15. November 2011 (Schallaburg, 2011): 24-33

Humer Franz (2011b). "Zeitreise in die Welt der Antike. Das Besucherzentrum Petronell". In: Bruckmüller, Ernst and Humer Franz (eds.), Erobern – Entdecken – Erleben im Römerland Carnuntum. Katalog zur Niederösterreichischen Landesausstellung 16. April – 15. November 2011 (Schallaburg, 2011): 42-57.

Humer Franz (2011c). "Schutz von antiken Bodendenkmälern im Archäologischen Park Carnuntum". In: Müller, Martin et al. (eds.), Schutzbauten und Rekonstruktionen in der Archäologie. Von der Ausgrabung zur Präsentation. Xanten, 21.-23. Oktober 2009. eine Tagung des LVR-Archäologischer Park Xanten, LVR-RömerMuseum [Xantener Berichte 19] (Mainz: von Zabern, 2011): 87–106.

Humer Franz (2012a). "Die Präsentation von archäologischen Denkmälern im Archäologischen Park Carnuntum". In: Reinholdt, Carl and Wohlmayr, Wolfgang (eds.), *Akten des 13. Österreichischen Archäologentages. Klassische und frühägäische Archäologie Paris-Lodron-Universität Salzburg, vom 25. bis 27. Februar 2010* (Vienna: Phoibos, 2012): 246-270.

Humer Franz (2012b). "Eine römische Gladiatorenschule in Carnuntum". In: Lauermann, Markus (ed.). *Beiträge zum Tag der Niederösterreichischen Landesarchäologie 2012. Katalog des NÖ Landesmuseums* [N.F. 507] (Asparn am Zaya: Urgeschichtemuseum Niederösterreich, 2012): 62-65.

Humer Franz (2013). "On the conservation of archaeological monuments in the Archaeological Park Carnuntum and their modern presentation *in situ*". In: Belarte, M.C. (ed.), *Interpretation spaces for archaeological heritage, discussions about "in situ" reconstructions. Proceedings of the 6th International Archaeological Meeting of Calafell, 17th EXARC Annual Meeting (Calafell, from 10th to 12th March 2011)* [Arqueo mediterrània 13] (Barcelona: Àrea d'Arqueologia, 2013): 43-54.

Humer Franz (2014a). "Carnuntum im Mittelalter und in der Neuzeit". In: Humer Franz (ed.), *CARNUNTUM - Wiedergeborene Stadt der Kaiser, Zabern´s Bildbände zur Archäologie* (Darmstadt: von Zabern, 2014): 167-172.

Humer Franz (2014b). "Das Archäologische Zentraldepot des Landes in der Kulturfabrik Hainburg". In: Humer Franz (ed.), *CARNUNTUM - Wiedergeborene Stadt der Kaiser, Zabern´s Bildbände zur Archäologie* (Darmstadt: von Zabern, 2014): 140-141.

Humer, F. (2016a). "Die Römer in Fischamend". In: Humer, Franz and Siegl, Kathrin (eds.), *AEQUINOCTIUM. Das römische Fischamend. Wichtiges antikes Bindeglied zwischen Vienna und Carnuntum* [Museumsverein Fischamend] (Budapest: Stadtmuseen Fischamend): 8-40.

Humer Franz (2016b). "Carnuntum – ein Pompeji vor den Toren Wiens, aber: Wie können wir die Originale erhalten? In: Hebert, Bernard and Hofer, Nicholaus (eds.), *Alte Mauern – Neue Konzepte. Aguntum – Konservierung und Entwicklung* [Fundberichte aus Österreich Tagungsbände 3] (Vienna, 2016): 75–84.

Humer Franz and Jobst, Werner, "Römische Paraderüstungen". In: Jobst, Werner (ed.), *Carnuntum. Das Erbe Roms an der Donau, Katalog Archäologisches Museum*

Carnuntinum (Wien: Amt der Niederösterreichischen Landesregierung, 1992): 239-245.

Humer Franz and Kremer, Gabrielle (eds.), *Götterbilder – Menschenbilder. Religion und Kulte in Carnuntum. Ausstellung im Rahmen der NÖ Landesausstellung 2011 im Archäologischen Museum Carnuntinum, Bad Deutsch-Altenburg 16. April 2011 bis 15. November 2012* (St. Pölten, 2011).

Humer Franz et al. (eds.), *AD 313 – Von Carnuntum zum Christentum. Katalog zur Ausstellung im Museum Carnuntinum aus Anlass zum Jubiläum „1700 Jahre Vereinbarung von Mailand"* (Bad Vöslau, 2014).

Humer Franz et al. *Zerstörungsfreie Archäologische Prospektion des römischen Carnuntum. Projektendbericht 05-2015*, Vienna (http://archpro.lbg.ac.at/press-release/archpro-carnuntum, 2015).

Humer Franz and Pollhammer, Eduard. "Sammlungsbereich Römische Archäologie". In: Laussegger, Alfred (ed.), *Tätigkeitsbericht 2015 über die Zusammenarbeit der Landessammlungen Niederösterreich mit dem Zentrum für Museale Sammlungswissenschafte* (Krems, 2016): 71-78.

Jobst, W., *Provinzhauptstadt Carnuntum* (Vienna: Österreichischer Bundesverlag, 1983).

Jobst, Werner. "Archäologie und Denkmalpflege in Carnuntum". *Carnuntum Jahrbuch* (1988): 79–85.

Jobst, W. (1992a). *Archäologischer Park Carnuntum, Vienna 1989; D. Bernt u.a., Archäologischer Park Carnuntum. Programmplanung, 2. Arbeitsabschnitt durch das ÖIR im Auftrag der NÖ Landesregierung, Kulturabteilung – Außenstelle Carnuntum.* (Vienna: Manuscript, 1990).

Jobst, W. (ed.) (1992b). *Carnuntum. Das Erbe Roms an der Donau, Katalog Archäologisches Museum Carnuntinum* (Wien: Amt der Niederösterreichischen Landesregierung, 1992).

Junkelmann, Markus. *Reiter wie Statuen aus Erz. Römische Paraderüstungen* [Sonderheft Antike Welt 27] (Mainz: von Zabern, 1996).

Junkelmann, Markus and Humer Franz. *Söhne der Nemesis. Festbankett, Festzug und Kämpfe der Gladiatoren in der Therme und im Übungsamphitheater zu Carnuntum am 28. Mai 2016* (leaflet, 2016).

Kandler, Manfred. *Das Forum der Colonia Carnuntum. Erste Ergebnisse von geophysikalischen Bodenprospektionen im Tiergarten des Schlosses Petronell* [Sonderschriften des Österreichischen Archäologischen Institutes 32] (Vienna, 1999): 359-368.

Kastler, Raymund. "Archäologie in Höflein bei Bruck a. d. Leitha", *Carnuntum Jahrbuch* (1995): 333-349.

Neubauer, W. (2011). "Archäologische Prospektion der Landschaft Carnuntum". *Denkmalpflege in Niederösterreich* (45, 2011): 27-29.

Neubauer, W. [s.a.]. *ArchPro Carnuntum. Zerstörungsfreie Archäologische Prospektion des Römischen Carnuntum* (https://archpro.lbg.ac.at/press-release/archpro-carnuntum).

Neubauer, Wolfgang and Gugl, Christian. "Konzentrierte Grundlagenforschung in Carnuntum". In: Humer Franz (ed.), *CARNUNTUM - Wiedergeborene Stadt der Kaiser, Zabern´s Bildbände zur Archäologie* (Darmstadt: von Zabern, 2014): 151-153.

Neubauer, Wolfgang and Seren, Sirri. "Die Entdeckung der Gladiatorenschule in Carnuntum". *Acta Carnuntina* (2/1, 2012): 4-13.

Niegl, Manfred Alois, *Die archäologische Erforschung der Römerzeit in Österreich. Eine wissenschaftsgeschichtliche Untersuchung.* [Denkschriften / Österreichische Akademie der Wissenschaften, Philosophisch-Historische Klasse 141] (Wien: Verlag der Österreichischen Akademie der Wissenschaften, 1980).

Pollhammer, Eduard. "Im Lot – Gebaute Geschichte in Carnuntum. Ausstellung in der Kulturfabrik Hainburg". *Archäologie Österreichs* (23/2, 2012): 46–51.

Pollhammer, Eduard. "Zur Sammlung und Inventarisierung der Steindenkmäler im Archäologischen Museum Carnuntinum". In: Humer Franz et al. (eds.), *Akten der 3. Österreichischen Römersteintagung in Carnuntum, 2.-3. Oktober 2014. Hainburg a. d. Donau* (Vienna, 2016): 163-176.

Pregesbauer, Martin et al. "Eine 3D Objektdatenbank als Webplattform des Archäologischen Parks Carnuntum". *Forum Archaeologiae* (31/6, 2004): http://farch.net.

Schmidt, Hartwig, *Wiederaufbau* [Denkmalpflege an archäologischen Stätten 2] (Stuttgart: K. Theiss, 1993).

Schmidt, Hartwig, *Archäologische Denkmäler in Deutschland. Rekonstruiert und wieder aufgebaut* (Stuttgart: K. Theiss, 2000).

Stiglitz, H., M. Kandler and W. Jobst (1987). "Carnuntum". In: H. Temporini and W. Haase (eds), *Aufstieg und Niedergang der römischen Welt. Geschichte und Kultur Roms im Spiegel der neueren Forschung*, vol. II/6: 721 – 727. Berlin and New York: de Gruyter.

UNESCO (2019) = UNESCO World Heritage Centre. "Frontiers of the Roman Empire". *World Heritage List.* Online: whc.unesco.org/en/list/430.

Wachter, M. (2015). "Carnuntum barrierefrei". *Acta Carnuntina* 5/2: 10-15.

Wikipedia (2019) = Wikipedia, The Free Encyclopedia. *Niederösterreichische Landesausstellung.* Online: de.wikipedia.org/wiki/Niederösterreichische_Landesausstellung.

Zabehlicky, Heinrich, "Das Hinterland von Carnuntum – Villen und Dörfer". In: Humer, Franz (ed.), *Legionsadler und Druidenstab. Vom Legionslager zur Donaumetropole* [Sonderausstellung aus Anlass des Jubiläums „2000 Jahre Carnuntum", Archäologisches Museum Carnuntinum Bad Deutsch-Altenburg 21. März 2006 – 11. November 2007] (Horn 2006): 354 – 359.

Zabehlicky, Heinrich. "*Die römische Palastanlage von Bruckneudorf.*" [Kleine Führer zu archäologischen Denkmälern. Neue Serie 1]. Bruckneudorf (2008).

De la ruine la istoria vie într-o metropolă romană de la Dunăre. Parcul Arheologic Carnuntum – European Heritage Label Award

Rezumat

Situat între Viena și Bratislava, Carnuntum este cel mai mare parc arheologic din Europa Centrală și de Sud-Est. Aproape întregul oraș roman, pe o suprafață de 10 kilometri pătrați, este păstrat sub câmpurile și podgoriile din Petronell-Carnuntum și Bad Deutsch-Altenburg. Guvernul Austriei de Jos nu numai că a stabilit noi standarde științifice internaționale, dar a conceput și un model privind planificarea utilizării teritoriului și conservarea monumentelor arheologice, cum să modeleze concepte viitoare destinate unei istorii oneste, planificării spațiale și economice. În interesul publicului, patrimoniul arheologic este pus în evidență din punct de vedere economic prin restaurarea săpăturilor vechi, prin realizarea noilor cercetări arheologice și prin reconstrucții parțiale sau complete, care oferă vizitatorilor o înțelegere mai bună a timpurilor străvechi inclusiv, prin implicarea activă a publicului în cercetările arheologice și în prezentările din muzee și expoziții speciale. În acest scop, noi tehnici de prezentare și sisteme multimedia sunt utilizate pentru a comunica informațiile respective, inclusiv o aplicație pentru telefon mobil.

Cuvinte cheie: Carnuntum, parc arheologic, management cultural, educație

Cristian Găzdac, Babeș-Bolyai University of Cluj-Napoca, Romania, e-mail: cgazdac2000@yahoo.co.uk

Franz Humer, Archaeological Park Carnuntum, Austria, e-mail: franz.humer@carnuntum.co.at